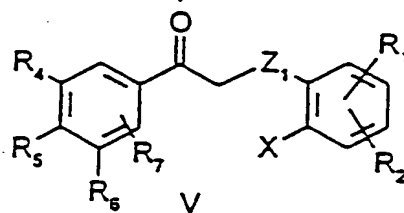
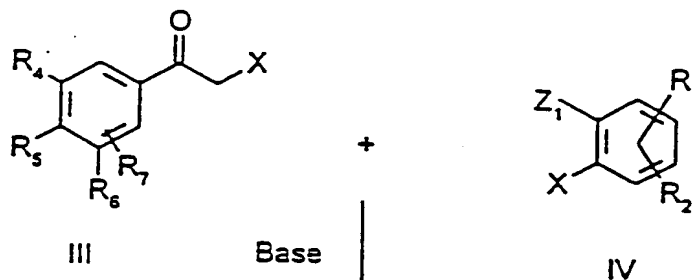
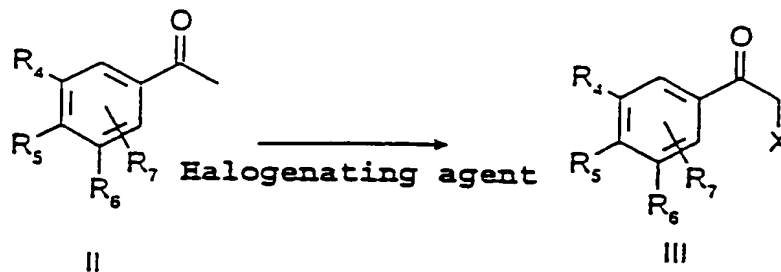
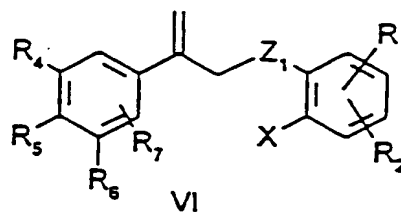


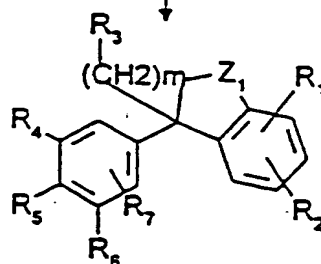
1/2



Phosphine or  
phosphonate  
Base



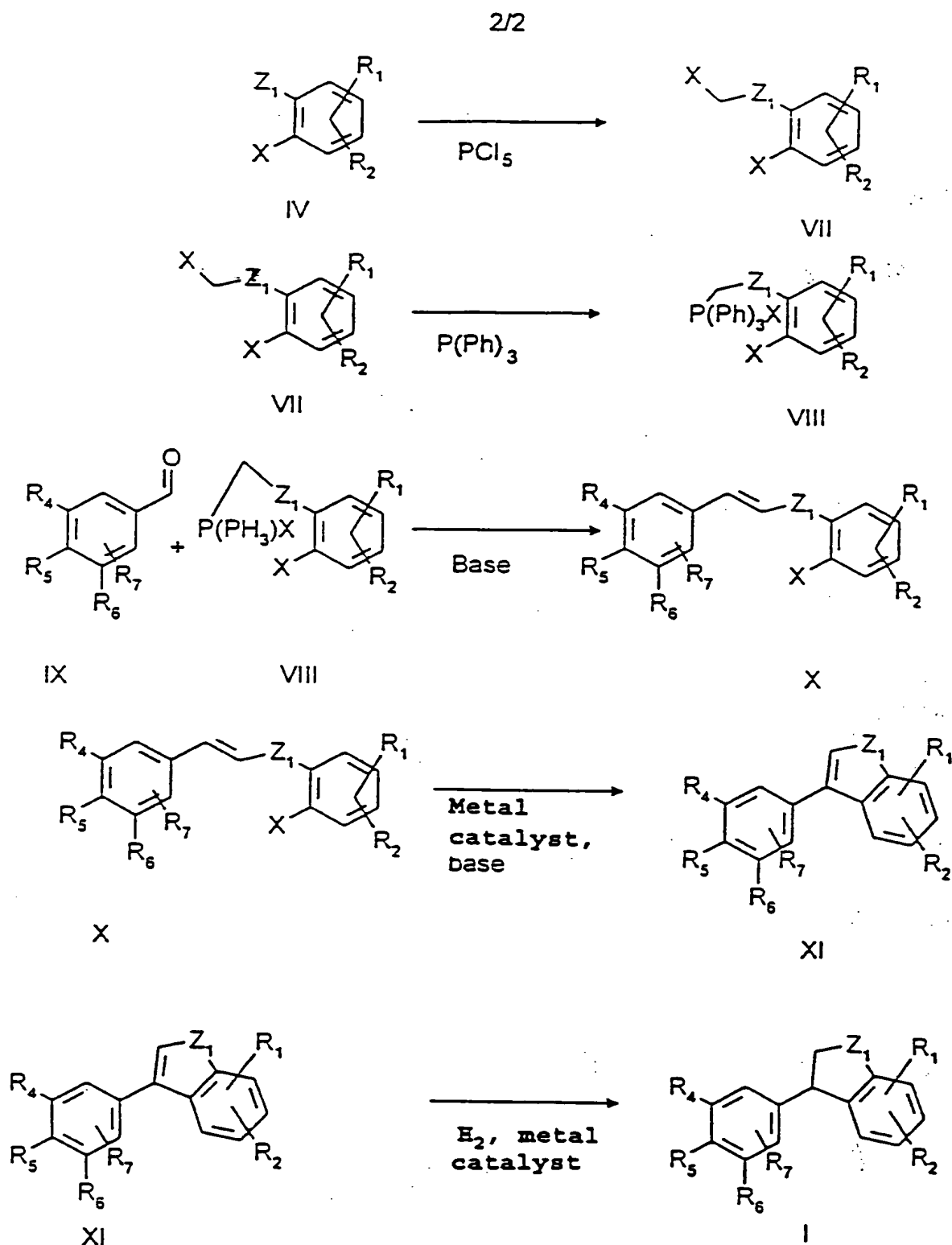
Metal catalyst,  
electrophile



X: halogen

Z<sub>1</sub>: hetero atom

FIGURE 1



**X: halogen**  
 **$Z_1$ : hetero atom**

FIGURE 2